REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1, 18, 25, 26, 31 and 32 have been amended to include the features of claim 8 in order to overcome the rejections in view of the prior art.

The present invention is directed to a stator core of an electrical machine, or more specifically, to improve heat conduction from electro-magnetic windings 6 and throughout the core teeth 14 for greater temperature control within an electrical machine.

The stator core is formed as an assembly from a number of laminations 9 of low loss stator iron with high electrical resistivity and a lesser number of laminations 11 of high thermal conductivity material. Windings 6 are arranged in slots 19 located between the stator core teeth 14. The laminations of high thermal conductivity material transfer and dissipate heat from the stator core providing express heat conductor pathways directly to the outside diameter of the stator core 2 (Page 5 lines 9-31 and Page 7 lines 14-16). It should be noted that carbon fibers are used in the thermally conducting laminations wherein the carbon fibers are arranged to extend radially as claimed in currently amended claims 1, 18, 25, 26, 31 and 32 (Page 7 lines 25-32).

The high thermal conductivity component laminations of the present invention are typically formed from copper or aluminium alloy. However, the high thermal conductivity laminations may also take the form of composites containing high thermal conductivity carbon fibers, carbon nanotubes, exfoliated graphite etc. (Page 7 lines 25-30). These materials may be used in composite form using a resin or adhesive as a matrix wherein the resin or adhesive is loaded with a high thermal conductivity material

(Page 10 lines 23 to Page 11 line 3).

JARCZYNSKI (EP0461906) discloses a stator core comprising core laminations 34 coaxially stacked with more highly thermal conductive laminations 36 which are interposed between pre-selected adjacent pairs of core laminations at selected axially spaced locations (Column 5 lines 48-53). Heat generated in the inner region of the core 24 is conducted towards the high thermal conductive laminations 36. The heat is then conducted along high thermal laminations 36 to the thermal collector 26 which collects and further transfers the heat to the coolant fluid circulating within passageways 28. It should be noted that the thermally conducting paths provided by the high thermal laminations 36 are more highly thermally conductive sheet metal laminations, i.e. copper or aluminum (Column 6 lines 40-49), interposed between adjacent core laminations (Column 3 lines 34-41). Furthermore, as the Examiner acknowledges, JARCZYNSKI does not disclose applying coatings to the laminations of the low loss stator iron assembly as claimed in claim 1.

SAWYER discloses a laminated core having insulation between its laminations and forming the sole means for securing the laminations in assembled relation in order to minimize and localize eddy currents within the laminated core (Column 1 lines 10-28). A path of low magnetic reluctance is provided around the core in order to prevent stray magnetic flux from passing through and inducing eddy currents in the supporting structure. Specifically, SAWYER discloses a stator with annular laminations 1 of steel or iron wherein the laminations are secured by a medium which provides insulation 9 between the laminations. An absorbent material 4 is placed between the steel or iron laminations 1 and is impregnated with a polybasic acid and polyhydric alcohol combined

with fatty acids forming a thermosetting liquid which coats the stator and its windings. This liquid coating is infusible and forms a binder-insulator for the stator. (Column 2 line 42 to Column 3 line 15). The absorbent material comprises fibrous threads 4b juxtapositioned between laminations 1. It should be noted that the fibrous threads 4b are not directed radially but rather extend parallel to each other (See Figure 3 or Column 2 lines 23-28). The electrical insulation is provided in order to minimize eddy currents and other losses. As SAWYER requires a binder-insulator to prevent eddy currents, SAWYER teaches away from the use of an electrical conductor, such as copper or aluminium, which is used in the present invention. If the binder-insulator comprises metal, eddy currents will be generated which is against the specific teaching of SAWYER. Furthermore, SAWYER fails to teach or disclose the binder-insulator being thermally conductive or being loaded with a high thermal conductivity material.

Neither JARCZYNSKI nor SAWYER disclose or teach the use of carbon fibers in thermally conducting laminations and neither JARCZYNSKI nor SAWYER disclose arranging the carbon fibers to extend radially as claimed in currently amended claims 1, 18, 25, 26, 31 and 32. Additionally, neither cited prior art disclose or teach a high thermal conductivity coating of copper or aluminium, an insulating coating of copper oxide or aluminium oxide, an adhesive or resin loaded with a high thermal conductivity material and high thermal conductivity laminations comprising an electrically insulating and thermally conductive material. Therefore, the present invention is believed novel and inventive over the cited prior art.

It would not be relevant to combine the disclosures of JARCZYNSKI and SAWYER since JARCZYNSKI teaches the use of conducting laminations and SAWYER

teaches the use of non-conducting laminations and thus they appear to have contradicting arrangements. However, if the disclosures of JARCZYNSKI and SAWYER were combined, the result would be a stator core comprising core laminations and thermally conducting laminations interposed periodically between adjacent stator core laminations, as taught by JARCZYNSKI, with the electrically insulating adhesive of SAWYER placed between adjacent stator core laminations and the thermally conducting laminations of JARCZYNSKI.

Entry of this amendment is solicited, is believed appropriate, and is believed to distinguish the invention from the cited references. For the foregoing reasons, reconsideration and allowance are believed in order and are solicited.

Respectfully submitted,

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